Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Please cancel claims 22-42 without prejudice and add new claims 43-103 as follows:

1-42. (canceled)

43. (new) A device for conducting a chemical reaction, the device comprising:

a) a body having at least first and second channels formed therein; and

b) a reaction vessel extending from the body, the reaction vessel having:

i) a reaction chamber;

ii) an inlet port connected to the reaction chamber via an inlet channel; and

iii) an outlet port connected to the reaction chamber via an outlet channel;

wherein the inlet port of the vessel is connected to the first channel in the body, the outlet port of the vessel is connected to the second channel in the body, and the body further includes a vent in fluid communication with the second channel for venting gas from the second channel.

44. (new) The device of claim 43, further comprising a differential pressure source for forcing fluid in the first channel in the body to flow through the inlet port of the vessel and into the reaction chamber.

45. (new) The device of claim 43, wherein the vessel includes:

i) a rigid frame defining side walls of the reaction chamber; and

ii) first and second polymeric films attached to opposite sides of the rigid frame to form opposing major walls of the reaction chamber.

46. (new) The device of claim 45, wherein each of the major walls is sufficiently flexible to conform to a respective thermal surface.

47. (new) The device of claim 45, wherein at least two of the side walls are optically transmissive and angularly offset from each other.

48. (new) The device of claim 43, wherein the ratio of the width of the chamber to the thickness of the chamber is at least 4:1, and wherein the chamber has a thickness less than 2 mm.

49. (new) The device of claim 43, wherein the body further includes a mixing chamber for mixing nucleic acid with amplification reagents, the mixing chamber being connected to the inlet port of the vessel via the first channel.

50. (new) The device of claim 43, wherein the body has formed therein:

i) a sample flow path; and

ii) a separation region in the sample flow path for separating a desired analyte from a fluid sample, the separation region being connected to the inlet port of the vessel via the first channel.

51. (new) The device of claim 50, wherein the separation region in the body comprises:

a) a lysing chamber in the sample flow path for lysing cells or viruses in the sample to release material therefrom; and

b) at least one solid support positioned in the lysing chamber for capturing the cells or viruses to be lysed.

52. (new) The device of claim 43, wherein the vessel includes a plurality of walls defining the reaction chamber, at least one of the walls comprising a flexible sheet or film, and the device further comprises:

a) at least one thermal surface for contacting the sheet or film;

b) means for increasing the pressure in the reaction chamber, wherein the pressure increase in the chamber is sufficient to force the sheet or film to conform to the thermal surface; and

c) at least one thermal element for heating or cooling the surface to induce a temperature change within the chamber.

53. (new) The device of claim 43, wherein the vessel includes two opposing major walls and sidewalls connecting the major walls to each other to form the reaction chamber, at least two of the side walls are optically transmissive and angularly offset from each other, and the device further comprises an optics system having at least one light source for transmitting light to the reaction chamber through a first one of the optically transmissive

side walls and having at least one detector for detecting light emitted from the chamber through a second one of the optically transmissive side walls.

54. (new) A device for conducting a chemical reaction, the device comprising:

a) a body having at least first and second channels formed therein; and

b) a reaction vessel extending from the body, the reaction vessel having:

i) a rigid frame defining side walls of a reaction chamber;

ii) first and second polymeric films attached to opposite sides of the rigid frame to form opposing major walls of the reaction chamber;

iii) an inlet port connected to the reaction chamber via an inlet channel; and

iv) an outlet port connected to the reaction chamber via an outlet channel;

wherein the inlet port of the vessel is connected to the first channel in the body and wherein the outlet port of the vessel is connected to the second channel in the body.

55. (new) The device of claim 54, wherein each of the major walls is sufficiently flexible to conform to a respective thermal surface.

56. (new) The device of claim 54, wherein at least two of the side walls are optically transmissive and angularly offset from each other.

57. (new) The device of claim 54, wherein the ratio of the width of the reaction chamber to the thickness of the reaction chamber is at least 4:1, and wherein the reaction chamber has a thickness less than 2 mm.

58. (new) The device of claim 54, wherein the body further includes a vent in fluid communication with the second channel for venting gas from the second channel.

59. (new) The device of claim 54, further comprising a differential pressure source for forcing fluid in the first channel in the body to flow through the inlet port of the vessel and into the reaction chamber.

60. (new) The device of claim 54, wherein the body further includes a mixing chamber for mixing nucleic acid with amplification reagents, the mixing chamber being connected to the inlet port of the vessel via the first channel.

61. (new) The device of claim 54, wherein the body has formed therein:

i) a sample flow path; and

ii) a separation region in the sample flow path for separating a desired analyte from a fluid sample, the separation region being connected to the inlet port of the vessel via the first channel.

62. (new) The device of claim 61, wherein the separation region in the body comprises:

a) a lysing chamber in the sample flow path for lysing cells or viruses in the sample to release material therefrom; and

b) at least one solid support positioned in the lysing chamber for capturing the cells or viruses to be lysed.

63. (new) The device of claim 54, further comprising:

a) at least first and second thermal surfaces for contacting the first and second films, respectively;

b) means for increasing the pressure in the reaction chamber, wherein the pressure increase in the chamber is sufficient to force the first and second films to conform to the first and second surfaces, respectively; and

c) at least one thermal element for heating or cooling the surfaces to induce a temperature change within the chamber.

64. (new) The device of claim 54, wherein at least two of the side walls are optically transmissive and angularly offset from each other, and the device further comprises an optics system having at least one light source for transmitting light to the reaction chamber through a first one of the optically transmissive side walls and having at least one detector for detecting light emitted from the chamber through a second one of the optically transmissive side walls.

65. (new) A device for conducting a chemical reaction, the device comprising:

a) a body having:

i) a sample flow path; and

ii) a separation region in the sample flow path for separating a desired analyte from a fluid sample;

b) a reaction vessel extending from the body, the reaction vessel having:

i) a reaction chamber;

ii) an inlet port connected to the reaction chamber via an inlet channel; and

iii) an outlet port connected to the reaction chamber via an outlet channel;

wherein the body further has at least first and second channels formed therein, the separation region being connected to the inlet port of the vessel via the first channel in the body, and the outlet port of the vessel being connected to the second channel in the body.

66. (new) The device of claim 65, wherein the separation region comprises:

a) a lysing chamber in the sample flow path for lysing cells or viruses in the sample to release material therefrom; and

b) at least one solid support positioned in the lysing chamber for capturing the cells or viruses to be lysed.

67. (new) The device of claim 65, wherein the vessel includes a plurality of walls defining the reaction chamber, at least one of the walls comprises a flexible sheet or film, and the device further comprises:

a) at least one thermal surface for contacting the sheet or film;

b) means for increasing the pressure in the reaction chamber, wherein the pressure increase in the chamber is sufficient to force the sheet or film to conform to the thermal surface; and

c) at least one thermal element for heating or cooling the surface to induce a temperature change in the reaction chamber.

68. (new) The device of claim 65, wherein the vessel includes two opposing major walls and sidewalls connecting the major walls to each other to form the reaction chamber, at least two of the side walls are optically transmissive and angularly offset from each other, and the device further comprises an optics system having at least one light source for transmitting light to the reaction chamber through a first one of the optically transmissive side walls and having at least one detector for detecting light emitted from the chamber through a second one of the optically transmissive side walls.

69. (new) The device of claim 65, wherein the body further includes a vent in fluid communication with the second channel for venting gas from the second channel.

70. (new) The device of claim 65, further comprising a differential pressure source for forcing fluid in the first channel in the body to flow through the inlet port of the vessel and into the reaction chamber.

71. (new) The device of claim 65, wherein the vessel includes:

i) a rigid frame defining side walls of the reaction chamber; and

ii) first and second polymeric films attached to opposite sides of the rigid frame to form opposing major walls of the reaction chamber.

72. (new) The device of claim 71, wherein each of the major walls is sufficiently flexible to conform to a respective thermal surface.

73. (new) The device of claim 71, wherein at least two of the side walls are optically transmissive and angularly offset from each other.

74. (new) The device of claim 65, wherein the ratio of the width of the reaction chamber to the thickness of the reaction chamber is at least 4:1, and wherein the reaction chamber has a thickness less than 2 mm.

75. (new) The device of claim 65, wherein the body further includes a mixing chamber for mixing the analyte with amplification reagents, the mixing chamber being connected to the inlet port of the vessel via the first channel.

76. (new) A device for conducting a chemical reaction, the device comprising:

a) a body having at least first and second channels formed therein; and

b) a reaction vessel extending from the body, the reaction vessel having:

i) a plurality of walls defining a reaction chamber, at least one of the walls comprising a flexible sheet or film;

ii) an inlet port connected to the reaction chamber via an inlet channel; and

iii) an outlet port connected to the reaction chamber via an outlet channel, wherein the inlet port of the vessel is connected to the first channel in the body, and wherein the outlet port of the vessel is connected to the second channel in the body;

c) at least one thermal surface for contacting the sheet or film;

d) means for increasing the pressure in the reaction chamber, wherein the pressure increase in the chamber is sufficient to force the sheet or film to conform to the thermal surface; and

e) at least one thermal element for heating or cooling the surface to induce a temperature change in the chamber.

77. (new) The device of claim 76, wherein the walls defining the reaction chamber include two opposing major walls and sidewalls connecting the major walls to each other, at least two of the side walls are optically transmissive, and the device further comprises an optics system having at least one light source for transmitting light to the reaction chamber through a first one of the optically transmissive side walls and having at least one detector for detecting light exiting the chamber through a second one of the optically transmissive side walls.

78. (new) The device of claim 76, wherein the body further includes a vent in fluid communication with the second channel for venting gas from the second channel.

79. (new) The device of claim 76, further comprising a differential pressure source for forcing fluid in the first channel in the body to flow through the inlet port of the vessel and into the reaction chamber.

80. (new) The device of claim 76, wherein the walls defining the reaction chamber include two opposing major walls and sidewalls connecting the major walls to each other, and wherein the vessel includes:

i) a rigid frame defining the side walls; and

ii) first and second polymeric films attached to opposite sides of the rigid frame to form the opposing major walls.

81. (new) The device of claim 80, wherein at least two of the side walls are optically transmissive and angularly offset from each other.

82. (new) The device of claim 76, wherein the ratio of the width of the chamber to the thickness of the chamber is at least 4:1, and wherein the chamber has a thickness less than 2 mm.

83. (new) The device of claim 76, wherein the body further includes a mixing chamber for mixing nucleic acid with amplification reagents, the mixing chamber being connected to the inlet port of the vessel via the first channel.

84. (new) The device of claim 76, wherein the body has formed therein:

i) a sample flow path; and

ii) a separation region in the sample flow path for separating a desired analyte from a fluid sample, the separation region being connected to the inlet port of the vessel via the first channel.

85. (new) The device of claim 84, wherein the separation region in the body comprises:

a) a lysing chamber in the sample flow path for lysing cells or viruses in the sample to release material therefrom; and

b) at least one solid support positioned in the lysing chamber for capturing the cells or viruses to be lysed.

86. (new) A device for conducting a chemical reaction, the device comprising:

a) a body having at least first and second channels formed therein; and

b) a reaction vessel extending from the body, the reaction vessel having:

i) a reaction chamber defined by two opposing major walls and side walls connecting the major walls to each other, at least two of the walls defining the reaction chamber being optically transmissive;

ii) an inlet port connected to the reaction chamber via an inlet channel; and

iii) an outlet port connected to the reaction chamber via an outlet channel, wherein the inlet port of the vessel is connected to the first channel in the body and wherein the outlet port of the vessel is connected to the second channel in the body; and

c) optics for optically interrogating the reaction chamber, the optics comprising at least one light source for transmitting light to the reaction chamber through a first one of the optically transmissive walls and at least one detector for detecting light exiting the chamber through a second one of the optically transmissive walls.

87. (new) The device of claim 86, wherein the body further includes a vent in fluid communication with the second channel for venting gas from the second channel.

88. (new) The device of claim 86, further comprising a differential pressure source for forcing fluid in the first channel in the body to flow through the inlet port of the vessel and into the reaction chamber.

89. (new) The device of claim 86, wherein the vessel includes:

i) a rigid frame defining the side walls; and

ii) polymeric films attached to opposite sides of the rigid frame to form the two opposing major walls.

90. (new) The device of claim 89, wherein each of the major walls is sufficiently flexible to conform to a respective thermal surface.

91. (new) The device of claim 86, wherein the at least two optically transmissive walls comprise at least two of the side walls, and wherein the at least two optically transmissive side walls are angularly offset from each other.

92. (new) The device of claim 86, wherein the ratio of the width of the chamber to the thickness of the chamber is at least 4:1, and wherein the chamber has a thickness less than 2 mm.

93. (new) The device of claim 86, wherein the body further includes a mixing chamber for mixing nucleic acid with amplification reagents, the mixing chamber being connected to the inlet port of the vessel via the first channel.

94. (new) The device of claim 86, wherein the body further has formed therein:

i) a sample flow path; and

ii) a separation region in the sample flow path for separating a desired analyte from a fluid sample, the separation region being connected to the inlet port of the vessel via the first channel.

95. (new) The device of claim 94, wherein the separation region in the body comprises:

a) a lysing chamber in the sample flow path for lysing cells or viruses in the sample to release material therefrom; and

b) at least one solid support positioned in the lysing chamber for capturing the cells or viruses to be lysed.

96. (new) The device of claim 86, wherein at least one of the major walls comprises a flexible sheet or film, and the device further comprises:

a) at least one thermal surface for contacting the sheet or film;

b) means for increasing the pressure in the reaction chamber, wherein the pressure increase in the chamber is sufficient to force the sheet or film to conform to the thermal surface; and

c) at least one thermal element for heating or cooling the surface to induce a temperature change in the chamber.

97. (new) A method for conducting a chemical reaction, the method comprising the steps of:

a) introducing a sample into a device comprising:

i) a body having a sample flow path and having a separation region in the sample flow path for separating a desired analyte from the sample; and

ii) a reaction vessel extending from the body, the reaction vessel having a reaction chamber, an inlet port connected to the reaction chamber via an inlet channel, and an outlet port connected to the reaction chamber via an outlet channel;

wherein the body further has a first channel connected to the inlet port of the vessel and a second channel connected to the outlet port of the vessel;

b) separating the analyte from the sample in the separation region;

c) forcing the analyte to flow into the reaction chamber of the vessel via the first channel in the body while air displaced from the reaction chamber exits through the outlet channel and outlet port of the vessel into the second channel in the body; and

d) conducting a chemical reaction in the reaction chamber.

98. (new) The method of claim 97, wherein the separation region comprises a lysing chamber in the sample flow path for lysing cells or viruses in the sample to release the analyte therefrom, and wherein the method further comprises the steps of:

i) capturing the cells or viruses with at least one solid support positioned in the lysing chamber; and

ii) lysing the cells or viruses in the lysing chamber.

99. (new) The method of claim 97, wherein the vessel includes a plurality of walls defining the reaction chamber, at least one of the walls comprises a flexible sheet or film, the

chemical reaction requires heating or cooling of the reaction chamber, and the reaction chamber is heated or cooled by:

i) placing the sheet or film in contact with at least one thermal surface;

ii) increasing the pressure in the reaction chamber, wherein the pressure increase in the chamber is sufficient to force the sheet or film to conform to the thermal surface; and

iii) heating or cooling the surface to induce a temperature change in the reaction chamber.

100. (new) The method of claim 97, wherein the vessel includes a plurality of walls defining the reaction chamber, at least two of the walls are optically transmissive, and the method further comprises the steps of transmitting light to the reaction chamber through a first one of the optically transmissive walls and detecting light emitted from the chamber through a second one of the optically transmissive walls.

101. (new) The method of claim 100, wherein the optically transmissive walls are angularly offset from each other by about 90°.

102. (new) The method of claim 97, further comprising the step of venting the air from the second channel in the body.

103. (new) The method of claim 97, wherein the chemical reaction comprises nucleic acid amplification, and the method further comprises the step of mixing the analyte with amplification reagents prior to forcing the analyte to flow into the reaction chamber.